Audix Technology Corp.
No. 491, Zhongfu Rd., Linkou Dist.,
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FCC 15.247
(Permissive Change)
2.4GHz Test Report

for

Contec Co., Ltd.

3-9-31, Himesato, Nishiyodogawa-ku, Osaka, 555-0025, Japan

Product Name	**:**	**IEEE802.11n/a/b/g Wireless LAN Access Point Board**
Model Name	**:**	**FXE3000-US**
Brand	**:**	**CONTEC**
FCC ID	**:**	**PQRFXE3000-US**

Prepared by: **:** **AUDIX Technology Corporation, EMC Department**

Testing Laboratory
1724

The test report is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo.

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TEST REPORT
(Permissive Change)

Applicant	:	Contec Co., Ltd.
Manufacturer	:	Contec Co., Ltd.
EUT Description		
(1) Product	:	IEEE802.11n/a/b/g Wireless LAN Access Point Board
(2) Model	:	FXE3000-US
(3) Brand	:	CONTEC
(4) Power Supply	:	DC 5-30V

Applicable Standards:

Title 47 CFR FCC Part 15 Subpart C

Audix Technology Corp. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.
Audix Technology Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens and samples.

Date of Report: 2023. 10. 04

Reviewed by: Sabrina Wang (Sabrina Wang/Administrator)

Approved by: Johnny Hsueh (Johnny Hsueh/Section Manager)

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1. REVISION RECORD OF TEST REPORT

Edition No	Issued Date	Revision Summary	Report Number
0	2023. 10. 04	Original Report	EM-F230490

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2. SUMMARY OF TEST RESULTS

Rule	Description	Results
15.207	Conducted Emission	**PASS**
15.247(d)/ 15.205	Radiated Band Edge and Radiated Spurious Emission	**PASS**
15.247(a)(2)	DTS/Occupied Bandwidth	**PASS**
15.247(b)(3)	Maximum Peak Output Power	**PASS**
15.247 (e)	Peak Power Spectral Density	**PASS**
15.203	Antenna Requirement	**Compliance**

Note:
1. Decision rule according to the limit of the test standard chapter, the test value is lower than the limit specified in the test chapter, and it is judged as Pass.
2. The uncertainties value is not used in determining the result.
3. Due to add new Antenna, above test item should be re-tested.

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3. GENERAL INFORMATION

3.1. Description of Application

Applicant	Contec Co., Ltd. 3-9-31, Himesato, Nishiyodogawa-ku, Osaka, 555-0025, Japan
Manufacturer	Contec Co., Ltd. 3-9-31, Himesato, Nishiyodogawa-ku, Osaka, 555-0025, Japan
Product	IEEE802.11n/a/b/g Wireless LAN Access Point Board
Model	FXE3000-US
Brand	CONTEC

3.2. Description of EUT

Test Model	FXE3000-US
Serial Number	N/A
Power Rating	DC 5-30V
RF Features	802.11 a/b/g/n
Transmit Type	2.4 GHz 802.11b 1T1R 802.11g 1T1R 802.11n-HT20 2T2R 802.11n-HT40 2T2R UNII Bands 802.11a 1T1R 802.11n-HT20 2T2R 802.11n-HT40 2T2R
Test Sample	Sample No. 01 / Test Item: AC Conduction, RSE, Conducted / Firmware: N/A
Sample Status	Trial sample
Date of Receipt	2023. 09. 12
Date of Test	2023. 09. 18 ~ 26
Interface Ports of EUT	• None
Accessories Supplied	• None

Note: Pursuant ISO 17025:2017 section 7.8.2, Audix Technology Corp. does not assume responsibility for all EUT's information including RF features, transmit type, antenna information…etc are provided by customer.

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3.3. Reference Test Guidance

KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10:2013

3.4. Information for Permissive Change

- The EUT is an addition version with original FCC ID: PQRFXE3000-US is to add new Dipole Antenna for Model FXE3000-US.
- The differences between this application and original's ID as clarify in following list.

Difference	Original	**Permissive Change**
Dipole Antenna	SANSEI ELECTRIC CO., LTD ANTDP-048A	**Add new Dipole Antenna** **MOLEX** **2158720101**

- Due to above different item, there have some test item should be re-tested (see section 2), the test data are recorded in this report.

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3.5. Antenna Information

2.4G Antenna

No.	Antenna Part Number	Manufacture	Antenna Type	Frequency (MHz)	Max Gain (dBi)		Directional Gain (dBi)
					Chain 0	Chain 1	
1	MR-1700-W	Azure Solutions, Inc.	Low Profile Vertical	1700 to 2500	4	4	**7.01** Note1
2	ACM3-5036-A1-CC-S (FX-ANT-A8)	INPAQ TECHNOLOGY CO., LTD	Chip (ANT3, ANT4)	2400 to 2500	3.0	3.0	**6.01** Note2
3	ACM3-5036-A1-CC-S (Integrated Antenna)	INPAQ TECHNOLOGY CO., LTD	Chip (ANT1, ANT2)	2400 to 2500	3.0	3.0	**6.01** Note2
4	ANTDP-048A0	SANSEI ELECTRIC CO., LTD	Dipole	2400 to 2500	2.14	2.14	**5.15** Note3
5	**2158720101***	**MOLEX**	**Dipole**	**2400 to 2500**	**3.80**	**3.80**	**6.81** **Note4**

Note 1. Directional gain = 10 log[($10^{4.0/20}$ + $10^{4.0/20}$)^2 /2]=7.01dBi
Note 2. Directional gain = 10 log[($10^{3.0/20}$ + $10^{3.0/20}$)^2 /2]=6.01dBi
Note 3. Directional gain = 10 log[($10^{2.14/20}$ + $10^{2.14/20}$)^2 /2]=5.15dBi
Note 4. Directional gain = 10 log[($10^{3.80/20}$ + $10^{3.80/20}$)^2 /2]=6.81dBi

Note: "*" Standing for adding new Antenna.

5G Antenna

No.	Antenna Part Number	Manufacture	Antenna Type	Frequency (MHz)	Max Gain (dBi)		Directional Gain (dBi)
					Chain 0	Chain 1	
1	MR-6000	Azure Solutions, Inc.	Low Profile Vertical	4900 to 6000	4	4	**7.01** Note1
2	ACM3-5036-A1-CC-S (FX-ANT-A8)	INPAQ TECHNOLOGY CO., LTD	Chip (ANT3, ANT4)	5000 to 6000	3.3	3.3	**6.31** Note.2
3	ACM3-5036-A1-CC-S (Integrated Antenna)	INPAQ TECHNOLOGY CO., LTD	Chip (ANT1, ANT2)	5000 to 6000	3.3	3.3	**6.31** Note2
4	ANTDP-048A0	SANSEI ELECTRIC CO., LTD	Dipole	5100 to5825	2.14	2.14	**5.15** Note3
5	**2158720101***	**MOLEX**	**Dipole**	**5000 to 6000**	**4.60**	**4.60**	**7.61** **Note4**

Note 1. Directional gain = 10 log[($10^{4.0/20}$ + $10^{4.0/20}$)^2 /2]=7.01dBi
Note 2. Directional gain = 10 log[($10^{3.3/20}$ + $10^{3.3/20}$)^2 /2]=6.31 dBi
Note 3. Directional gain = 10 log[($10^{2.14/20}$ + $10^{2.14/20}$)^2 /2]=5.15dBi
Note 4. Directional gain = 10 log[($10^{4.60/20}$ + $10^{4.60/20}$)^2 /2]=7.61dBi

Note: "*" Standing for adding new Antenna.

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3.6. EUT Specifications Assessed in Current Report

Mode	Fundamental Range (MHz)	Channel Number	Modulation	Data Rate (Mbps)
802.11b	2412-2462	11	DSSS (DBPSK/DQPSK/CCK)	Up to 11
802.11g		11	OFDM (BPSK/QPSK/16QAM/64QAM)	Up to 54
802.11n-HT20				Up to 144.4
802.11n-HT40	2422-2452	7	OFDM (BPSK/QPSK/16QAM/64QAM)	Up to 300

Channel List					
802.11 b/g/n-HT20					
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
1	2412	5	2432	9	2452
2	2417	6	2437	10	2457
3	2422	7	2442	11	2462
4	2427	8	2447		
802.11n-HT40					
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
3	2422	6	2437	9	2452
4	2427	7	2442		
5	2432	8	2447		

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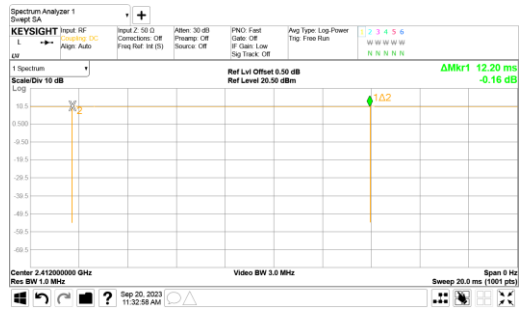
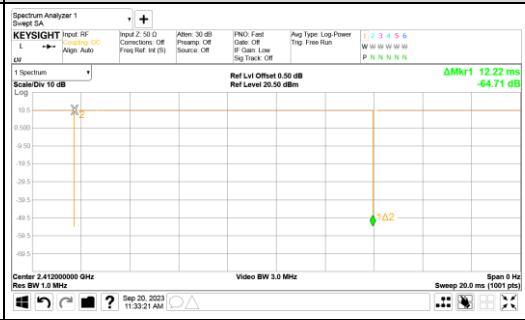
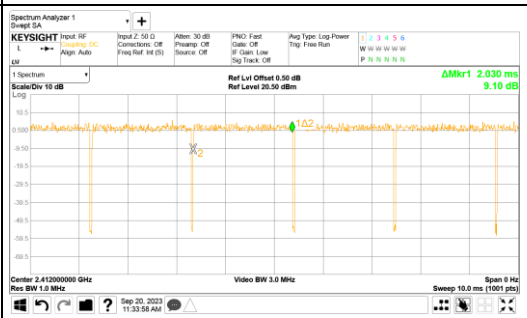
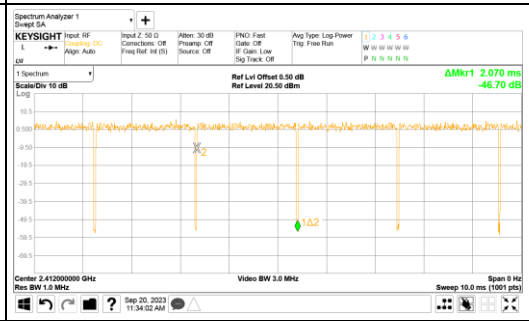
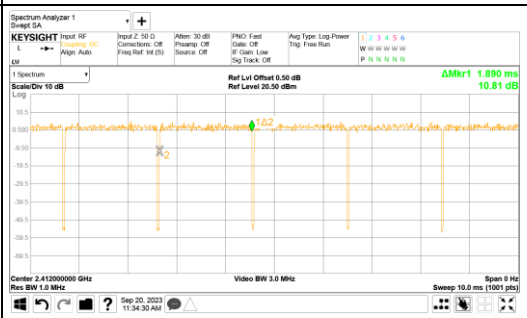
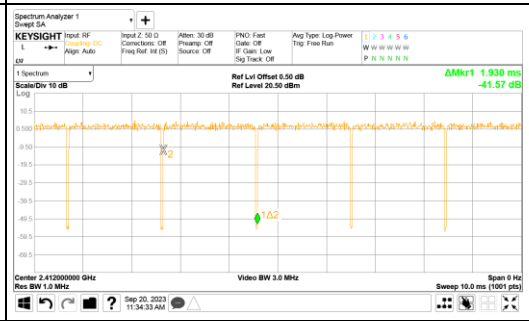
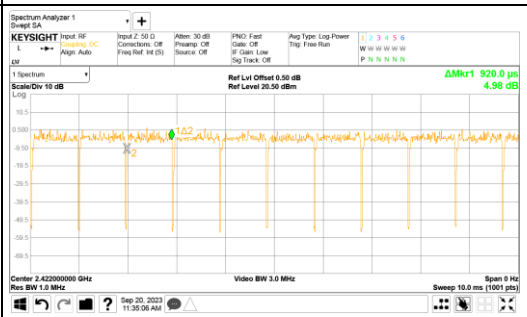
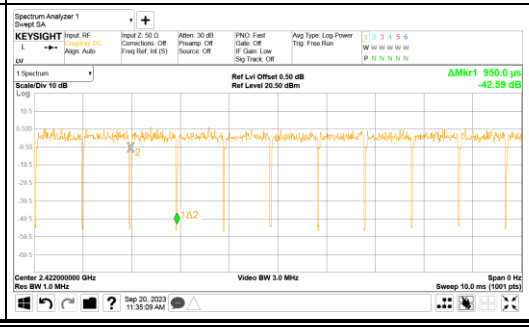
3.7. Descriptions of Key Components

None

3.8. Test Configuration

Mode	TX_{on} (ms)	TX_{on+off} (ms)	Duty Cycle (x)	Duty Cycle Factor [10log(1/x)] (dB)
802.11b	12.200	12.220	0.998	N/A
802.11g	2.030	2.070	0.981	N/A
802.11n-HT20	1.890	1.930	0.979	0.092
802.11n-HT40	0.920	0.950	0.968	0.141

Note: When duty cycle is less than 98% (0.98) that duty cycle factor 10log(1/x) is needed to add in conducted test items measured in average detector.

Mode	TX_{on} (ms)	$T_{on}+T_{off}$(ms)
802.11b		
802.11g		
802.11n-HT20		
802.11n-HT40		

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AC Conduction
Normal operation

Item		Mode	Data Rate	Test Channel
Radiated Test Case	Radiated Spurious Emission (30MHz~1GHz)	802.11n-HT20	MCS8	10

Item		Mode	Data Rate	Test Channel
Radiated Test Case	Radiated Band Edge Note 1 & 2	802.11b	1Mbps	1/11
		802.11g	6Mbps	1/11
		802.11n-HT20	MCS8	1/2/6/10/11
		802.11n-HT40	MCS8	3/4/5/7/8/9
	Radiated Spurious Emission Note1	802.11b	1Mbps	11
		802.11g	6Mbps	6
		802.11n-HT20	MCS8	10
		802.11n-HT40	MCS8	5

Item		Mode	Data Rate	Test Channel
Conducted Test Case	6dB/Occupied Bandwidth	802.11b	1Mbps	1/6/11
		802.11g	6Mbps	1/6/11
		802.11n-HT20	MCS8	1/6/11
		802.11n-HT40	MCS8	3/7/9
	Peak Output Power	802.11b	1Mbps	1/7/11
		802.11g	6Mbps	1/2/6/10/11
		802.11n-HT20	MCS8	1/2/6/10/11
		802.11n-HT40	MCS8	3/4/5/6/7/8/9
	Peak Power Spectral Density	802.11b	1Mbps	1/7/11
		802.11g	6Mbps	1/7/11
		802.11n-HT20	MCS8	1/7/11
		802.11n-HT40	MCS8	3/7/9

Note 1: ☐Mobile Device ■Portable Device,
and 3 axis were assessed. The worst scenario for Radiated Spurious Emission as follow: ■Lie ☐Side ☐Stand
Note 2: Low, mid, and high channels were measured, only the worst channel of each modulation was presented in this report.
Note 3: The data rates were selected based on preliminary testing that identified rate as the worst case for output power.

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3.9. Output Power Setting

Mode	Centre Frequency (MHz)	Power Setting
802.11b	2412	20.5
	2437	20.0
	2462	21.5
802.11g	2412	13.5
	2417	15.5
	2437	17.5
	2457	16.0
	2462	13.5
802.11n-HT20	2412	10.0
	2417	14.0
	2437	15.0
	2457	15.0
	2462	12.5
802.11-HT40	2422	9.5
	2427	10.0
	2432	11.0
	2437	11.0
	2442	10.5
	2447	9.5
	2452	9.0

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3.10. Tested Supporting System List

3.10.1. Support Peripheral Unit

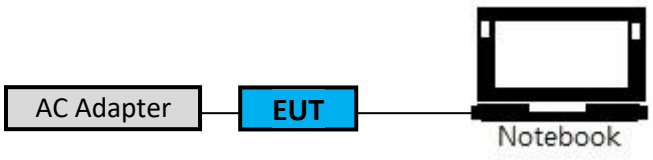
No.	Product	Brand	Model No.	Serial No.	Approval
1.	Notebook PC	acer	N22Q3	NHQGETA002255FD7600	Contains FCC ID: HLZMT7921
2.	AC Adapter	SINO-AMERICAN	SA115B-05U	N/A	N/A

3.10.2. Cable Lists

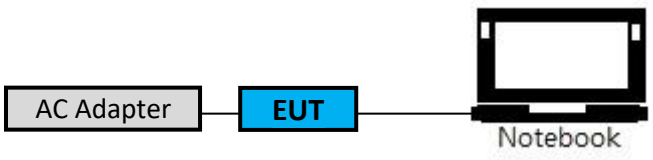
No.	Cable Description Of The Above Support Units
1.	LAN Cable：Unshielded, Detachable, 1.8m Adapter: LITEON, M/N PA-1900-32 DC Power Cable：Shielded, Undetachable, 1.7m, Bonded a ferrite core AC Power Cord：Unshielded, Detachable, 0.9m
2.	DC Power Cable：Shielded, Undetachable, 1.8m AC Power Cord：Unshielded, Detachable, 0.5m (2C)

3.11. Setup Configuration

3.11.1. EUT Configuration for Power Line & Radiated Emission



3.11.2. EUT Configuration for RF Conducted Test Items



3.12. Operating Condition of EUT

Test program “artgui” is used for enabling EUT WLAN function under continues transmitting and choosing data rate/ channel.

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3.13.Description of Test Facility

Name of Test Firm	Audix Technology Corporation / EMC Department No. 491, Zhongfu Rd., Linkou Dist., New Taipei City 244, Taiwan Tel: +886-2-26092133 Fax: +886-2-26099303 Website : www.audixtech.com Contact e-mail: attemc_report@audixtech.com
Accreditations	The laboratory is accredited by following organizations under ISO/IEC 17025:2017 (1) NVLAP(USA) NVLAP Lab Code 200077-0 (2) TAF(Taiwan) No. 1724
Test Facilities	FCC OET Designation Number under APEC MRA by NCC is : TW1724 ISED CAB Identifier Number under APEC TEL MRA by NCC is TW1724 (1) No.8 Shielded Room (2) No.1 3m Semi Anechoic Chamber

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3.14.Measurement Uncertainty

The measurement uncertainty levels have been estimated as specified in ETSI TR 100 028-2001

Test Items/Facilities			Frequency Range	Uncertainty
Conduction Test	☐	No. 7 Shielded Room	9kHz-150kHz	±3.7dB
			150kHz-30MHz	±3.4dB
	☒	No. 8 Shielded Room	9kHz-150kHz	±3.7dB
			150kHz-30MHz	±3.5dB
Radiation Test	☒	No.1 3m Semi Anechoic Chamber	30MHz-200MHz, 3m, Horizontal	±3.6dB
			200MHz-1000MHz, 3m, Horizontal	±4.3dB
			30MHz-200MHz, 3m, Vertical	±4.4dB
			200MHz-1000MHz, 3m, Vertical	±4.8dB
			1GHz-6GHz, 3m	±4.8dB
			6GHz-18GHz, 3m	±4.5dB
	☐	No.3 3m Semi Anechoic Chamber	30MHz-200MHz, 3m, Horizontal	±4.0dB
			200MHz-1000MHz, 3m, Horizontal	±4.4dB
			30MHz-200MHz, 3m, Vertical	±4.7dB
			200MHz-1000MHz, 3m, Vertical	±4.5dB
			1GHz-6GHz, 3m	±4.8dB
			6GHz-18GHz, 3m	±4.5dB
	☐	No.4 3m Semi Anechoic Chamber	30MHz-200MHz, 3m, Horizontal	±4.3dB
			200MHz-1000MHz, 3m, Horizontal	±4.2dB
			30MHz-200MHz, 3m, Vertical	±4.8dB
			200MHz-1000MHz, 3m, Vertical	±4.7dB
			1GHz-6GHz, 3m	±4.6dB
			6GHz-18GHz, 3m	±4.4dB
	☐	No.5 3m Semi Anechoic Chamber	30MHz-200MHz, 3m, Horizontal	±4.6dB
			200MHz-1000MHz, 3m, Horizontal	±4.4dB
			30MHz-200MHz, 3m, Vertical	±4.5dB
			200MHz-1000MHz, 3m, Vertical	±4.9dB
			1GHz-6GHz, 3m	±4.9dB
			6GHz-18GHz, 3m	±4.6dB
	Radiated emissions (18GHz-40GHz)		18GHz-40GHz, 3m	±3.4dB

Remark：Uncertainty = $ku_c(y)$

Test Item	Uncertainty
6dB Bandwidth	± 0.05kHz
Maximum peak output power	± 0.33dB
Power spectral density	± 0.13dB

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4. MEASUREMENT EQUIPMENTLIST

4.1. Conducted Emission Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Test Receiver	R&S	ESR3	101774	2023.01.11	1 Year
2.	A.M.N.	R&S	ENV432	101567	2023.06.02	1 Year
3.	L.I.S.N.	Kyoritsu	KNW-407	8-855-9	2022.12.19	1 Year
4.	Pulse Limiter	R&S	ESH3-Z2	100354	2022.12.14	1 Year
5.	Digital Thermo-Hygro Meter	iMax	HTC-1	No.8 S/R	2023.04.13	1 Year
6.	Coaxial Cable	Yeida	RG/58AU	CE-08	2023.09.06	1 Year
7.	Test Software	Audix	e3	V9 18621a	N.C.R.	N.C.R.

4.2. Radiated Emission Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A-526	MY53400071	2023.08.16	1 Year
2.	Test Receiver	R&S	ESCS30	100338	2023.06.20	1 Year
3.	Amplifier	HP	8447D	2944A06305	2022.12.29	1 Year
4.	Microwave Amplifier	Keysight	83051A	MY56480113	2023.09.11	1 Year
5.	Microwave Amplifier	HP	8449B	3008A01284	2023.06.06	1 Year
6.	Loop Antenna	TESEQ	HLA 6121	60478	2023.02.21	1 Year
7.	Bilog Antenna	TESEQ	CBL6112D	33821	2023.06.30	1 Year
8.	Horn Antenna	EMCO	3115	9609-4927	2023.07.21	1 Year
9.	Horn Antenna	COM-POWER	AH-840	101092	2022.12.30	1 Year
10.	2.4GHz Notch Filter	K&L Microwave	7NSL10-2441.5/ E130.5-O/O	2	2023.07.22	1 Year
11.	3GHz Notch Filter	Microwave	H3G018G1	484796	2023.07.22	1 Year
12.	Coaxial Cable	MIYAZAKI	5D2W	RE-11	2023.01.07	1 Year
13.	Coaxial Cable	HUBER+SUHNER	RG223/U	RE-33	2023.03.02	1 Year
14.	Coaxial Cable	HUBER+SUHNER	SUCOFLEX 106	RE-14	2023.01.07	1 Year
15.	Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	RE-30	2023.08.21	1 Year
16.	Digital Thermo-Hygro Meter	iMax	HTC-1	No.1 3m A/C	2023.04.13	1 Year
17.	Test Software	Audix	e3	V9 18621a	N.C.R.	N.C.R.

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4.3. RF Conducted Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Keysight	N9020B-544	MY57120357	2023.02.22	1 Year
2.	Power Meter	Anritsu	ML2495A	2127005	2022.12.01	1 Year
3.	Power Sensor	Anritsu	MA2411B	1911360	2022.12.07	1 Year
4.	Digital Thermo-Hygro Meter	iMax	HTC-1	RF-03	2023.04.13	1 Year

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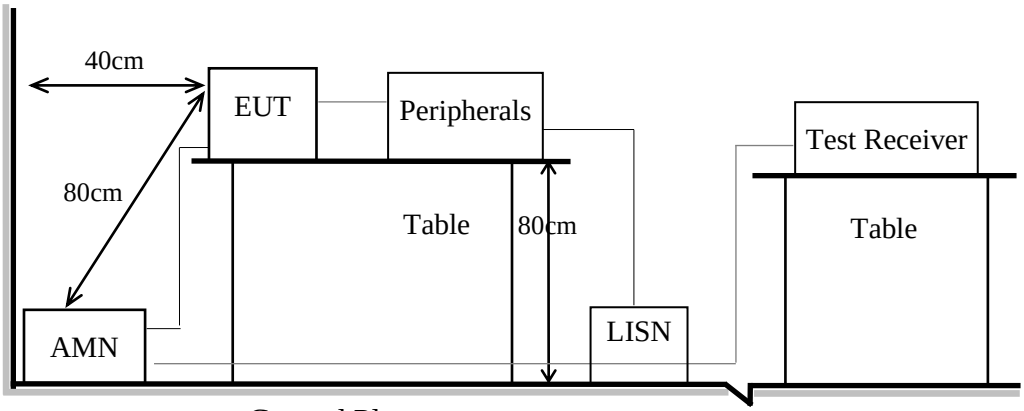
5. CONDUCTED EMISSION

5.1. Block Diagram of Test Setup

5.1.1. Block Diagram of EUT

Indicated as section 3.11

5.1.2. Shielded Room Setup Diagram



5.2. Conducted Emission Limit

Frequency	Conducted Limit	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dBμV	56 ~ 46 dBμV
500kHz ~ 5MHz	56 dBμV	46 dBμV
5MHz ~ 30MHz	60 dBμV	50 dBμV

Remark 1.: If the average limit is met when using a Quasi-Peak detector, the measurement using the average detector is not required.
2.: The lower limit applies to the band edges.

5.3. Test Procedure

5.3.1. To set up the EUT as indicated in ANSI C63.10. The EUT was placed on the table which has 80 cm height to the ground and 40 cm distance to the conducting wall.
5.3.2. Power supplier of the EUT was connected to the AC mains through an Artificial Mains Network (A.M.N.).
5.3.3. The AC power supplies to all peripheral devices must be provided through line impedance stabilization network (L.I.S.N.)
5.3.4. Checking frequency range from 150kHz to 30 MHz and record the emission which does not have 20 dB below limit.

5.4. Test Results

Please refer to Appendix A.

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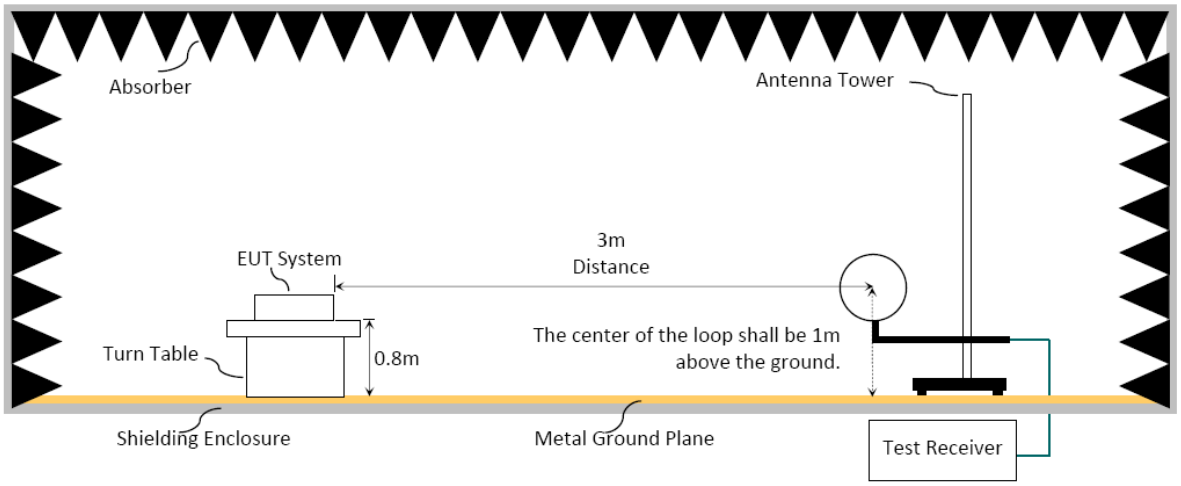
6. RADIATED EMISSION

6.1. Block Diagram of Test Setup

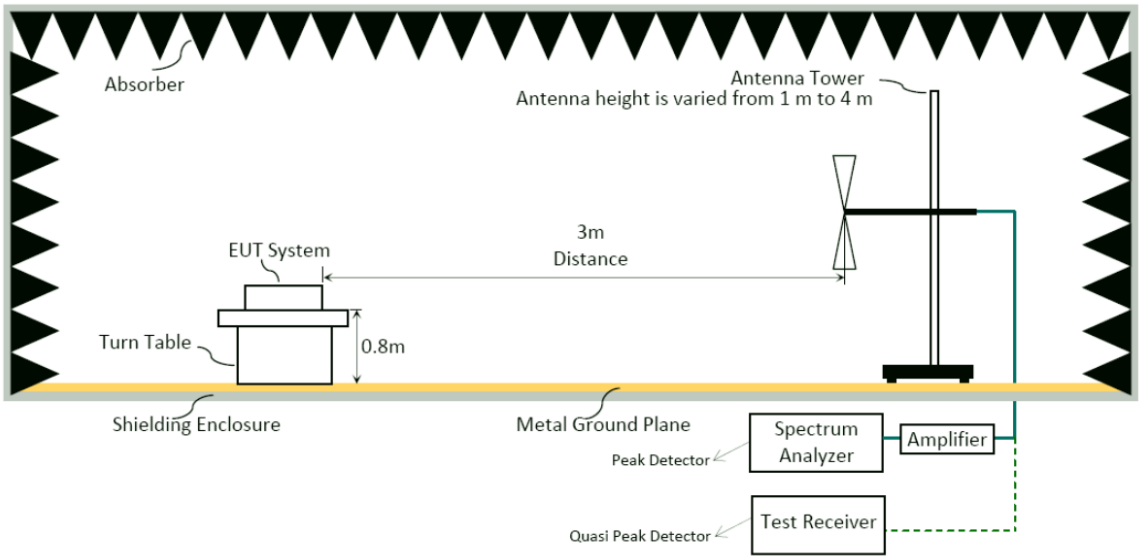
6.1.1. Block Diagram of EUT

Indicated as section 3.11

6.1.2. Setup Diagram for 9kHz-30MHz



6.1.3. Setup Diagram for 30-1000MHz



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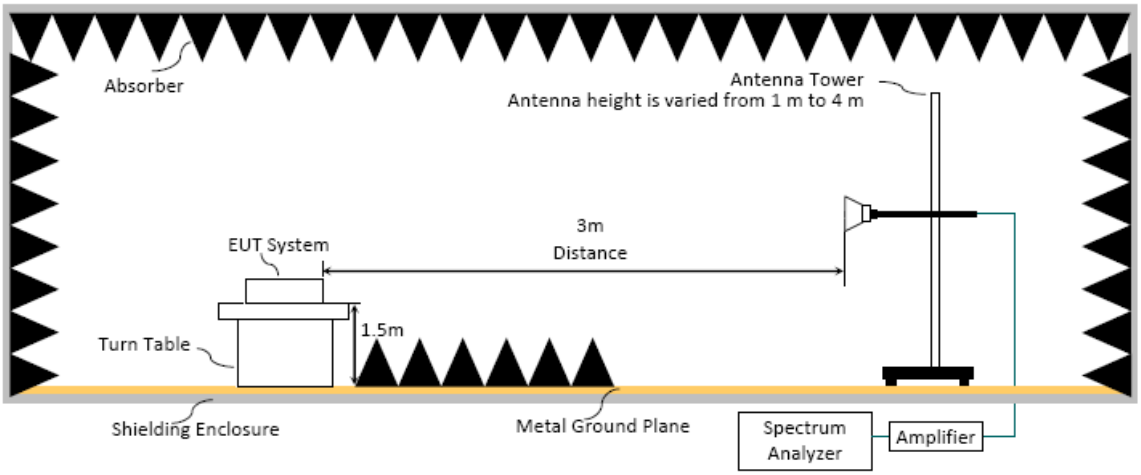
6.1.4. Setup Diagram for above 1GHz



6.2. Radiated Emission Limits

In any 100kHz bandwidth outside the frequency band, the radio frequency power produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205/RSS-Gen Section 8.10 table 6, must also comply with the radiated emission limits specified as below.

Frequency (MHz)	Distance(m)	Limits	
		dBμV/m	μV/m
0.009 - 0.490	300	67.6-20 log f(kHz)	2400/f kHz
0.490 - 1.705	30	87.6-20 log f(kHz)	24000/f kHz
1.705 - 30	30	29.5	30
30 - 88	3	40.0	100
88- 216	3	43.5	150
216- 960	3	46.0	200
Above 960	3	54.0	500
Above 1000	3	74.0 dBμV/m (Peak) 54.0 dBμV/m (Average)	

Remark：(1) dBμV/m = 20 log (μV/m)
(2) The tighter limit applies to the edge between two frequency bands.
(3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
(4) Fundamental and emission fall within operation band are exempted from this section.
(5) Pursuant to ANSI C63.10: 6.6.4.3,if the maximized peak measured value complies with the average limit, then it is unnecessary to perform an average measurement.

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6.3. Test Procedure

Frequency Range 9kHz~30MHz:
The EUT setup on the turntable which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna fixed to 1 m to find the maximum emission level.
In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

(1) RBW = 9kHz with peak and average detector.

(2) Detector: average and peak (9kHz-490kHz)
Q.P. (490kHz-30MHz)

Frequency Range 30MHz ~ 25GHz:
The EUT setup on the turn table which has 80cm (for 30-1000MHz) and 1.5m (for above 1GHz) height to the ground. The turn table rotated 360 degrees and antenna varied from 1 m to 4 m to find the maximum emission level. Both horizontal and vertical polarization are required. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

Frequency below 1GHz:
Spectrum Analyzer is used for pre-testing with following setting:

(1)RBW = 120KHz

(2)VBW ≥ 3 x RBW.

(3)Detector = Peak.

(4)Sweep time = auto.

(5)Trace mode = max hold.

(6)Allow sweeps to continue until the trace stabilizes.

Note 1: When peak-detected value is lower than limit that the measurement using the Q.P. detector is not required, otherwise using Q.P. for final measurement.

Note 2: When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds.

Frequency above 1GHz to 10th harmonic (up to 25 GHz):
Peak Detector:

(1)RBW = 1MHz

(2)VBW ≥ 3 x RBW.

(3)Detector = Peak.

(4)Sweep time = auto.

(5)Trace mode = max hold.

(6)Allow sweeps to continue until the trace stabilizes.

Note: When peak-detected value is lower than limit that the measurement using the average detector is not required, otherwise using average detector for final measurement.

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Average Detector:

■**Option 1:**

(1)RBW = 1MHz

(2)VBW ≥ 1/ T. (Duty Cycle < 98%, when duty cycle presented in section 3.8)

Modulation Type	VBW Setting (VBW ≥ 1/ T)
802.11n-HT20	560Hz
802.11n-HT40	1.1kHz

(3)VBW = 10Hz (Duty Cycle ≥ 98%, when duty cycle presented in section 3.7)

Modulation Type	VBW Setting
802.11b	10Hz
802.11g	10Hz

(4)Detector = Peak.

(5)Sweep time = auto.

(6)Trace mode = max hold.

(7)Allow sweeps to continue until the trace stabilizes.

□**Option 2:**

Average Emission Level= Peak Emission Level+ D.C.C.F.

6.4. Measurement Result Explanation

■Peak Emission Level(dBμV/m)=Antenna Factor(dB/m) + Cable Loss (dB)– Preamp Gain (dB)+ Reading(dBμV).

■Average Emission Level(dBμV/m)= Antenna Factor(dB/m) + Cable Loss (dB)– Preamp Gain (dB)+ Reading(dBμV).

□Average Emission Level(dBμV/m)= Peak Emission Level(dBμV/m)+ DCCF(dB)
Duty Cycle Correction Factor (DCCF)(dB)= 20log(TX_{on}/TX_{on+off}) presented in section 3.8.

□ERP(dBm)= Peak Emission Level(dBμV/m) -95.2dB-2.14dB

6.5. Test Results

Please refer to Appendix A.

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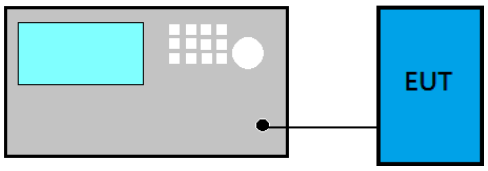
7. DTS/OCCUPIED BANDWIDTH

7.1. Block Diagram of Test Setup



7.2. Specification Limits

The minimum 6dB bandwidth shall be at least 500kHz.

7.3. Test Procedure

Following measurement procedure is reference to ANSI C63.10:2013:

For DTS Bandwidth

(1) Set RBW = 100 kHz.
(2) Set the video bandwidth (VBW) ≥ 3 × RBW.
(3) Detector = Peak.
(4) Trace mode = max hold.
(5) Sweep = auto couple.
(6) Allow the trace to stabilize.
(7) Setting channel bandwidth function x to -6dB power to record the final bandwidth..

For 99% Occupied Bandwidth

(1) Set Span range 1.5~5 times the OBW
(2) Set RBW close to1% to 5% of OBW.
(3) Set VBW≥3xRBW.
(4) Detector = Peak.
(5) Trace mode = Max hold
(6) Sweep = Auto couple.
(7) Allow the trace to stabilize.

7.4. Test Results

Please refer to Appendix A

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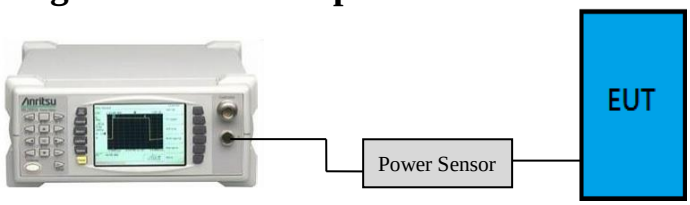
8. MAXIMUM PEAK OUTPUT POWER

8.1. Block Diagram of Test Setup



8.2. Specification Limits

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5MHz is : 1Watt. (30dBm), and E.I.R.P.: 4Watt (36dBm)

8.3. Test Procedure

Following measurement procedure is reference to ANSI C63.10:2013:

■PKPM1 Peak power meter method:

EUT is connected to power sensor and record the maximum output power.

■Maximum peak conducted output power method:

(1) Set the RBW ≥ DTS bandwidth
(2) Set VBW ≥ 3 × RBW
(3) Set span ≥ 3 × RBW.
(4) Sweep time = auto couple
(5) Detector = peak.
(6) Trace mode = max hold.
(7) Allow trace to fully stabilize.
(8) Use peak marker function to determine the peak amplitude level.

■Method AVGPM (Measurement using an RF average power meter):

EUT is connected to power sensor and record the maximum average output power and duty cycle factor is added when duty cycle presented in section 3.8 is< 98%.

□Method AVGSA-2 (Spectrum channel power)

(1) Set span to at least 1.5 times the OBW
(2) Set RBW = 1 -5%of OBW
(3) Set the video bandwidth (VBW) ≥ 3 × RBW.
(4) Detector = RMS.
(5) Trace mode = trace average at least 100 traces
(6) Sweep = auto couple.
(7) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges.
(8) Duty cycle factor is added when duty cycle presented in section 3.8 is < 98%.

8.4. Test Results

Please refer to Appendix A

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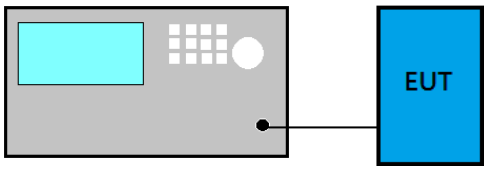
9. POWER SPECTRAL DENSITY

9.1. Block Diagram of Test Setup



9.2. Specification Limits

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band.

9.3. Test Procedure

Following measurement procedure is reference to ANSI C63.10:2013:

■Method PKPSD (peak PSD)

(1) Set analyzer center frequency to DTS channel center frequency.
(2) Set the span to 1.5 times the DTS bandwidth.
(3) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
(4) Set the VBW ≥ 3 × RBW.
(5) Detector = peak.
(6) Sweep time = auto couple.
(7) Trace mode = max hold.
(8) Allow trace to fully stabilize.
(9) Use the peak marker function to determine the maximum amplitude level.
(10) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

□Method AVGPSD-2

(1) Using peak PSD procedure step 1 to step 4.
(2) Detector= RMS detector
(3) Sweep time = auto couple
(4) Trace mode = trace averaging over a minimum of 100 traces
(5) Use the peak marker function to determine the maximum amplitude level.
(6) Duty cycle factor is added when duty cycle presented in section 3.8< 98%.
(7) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

9.4. Test Results

Please refer to Appendix A

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10. DEVIATION TO TEST SPECIFICATIONS

【NONE】

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APPENDIX A

TEST DATA AND PLOTS

(Model: FXE3000-US)

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APPENDIX B

TEST PHOTOGRAPHS

(Model: FXE3000-US)